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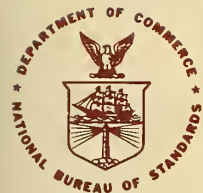
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U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards

## Hydrogen-Future Fuel-A Bibliography (With Emphasis on Cryogenic Technology)

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<sup>2</sup> Part of the Center for Radiation Research.

<sup>3</sup> Located at Boulder, Colorado 80302.

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# Hydrogen-Future Fuel-A Bibliography (With Emphasis on Cryogenic Technology)

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N. A. Olien  
S. A. Schiffmacher

<sup>t</sup> Technical note no. 664

Cryogenics Division  
Institute for Basic Standards  
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U.S. DEPARTMENT OF COMMERCE, Frederick B. Dent, Secretary

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# CONTENTS

INTRODUCTION . . . . .	iii
1---Books, Conferences, Proceedings, Handbooks, Etc. . . . .	1
2---Energy - General Papers . . . . .	2
3---Hydrogen Fuel - General Papers . . . . .	9
4---Properties of Liquid and Gaseous Hydrogen . . . . .	11
5---Solid Hydrogen . . . . .	18
6---Slush Hydrogen . . . . .	21
7---Effects of Hydrogen on Other Materials . . . . .	22
8---Properties of Hydrogen Mixtures . . . . .	25
9---Heat Transfer and Fluid Dynamics . . . . .	28
10---Ortho-Para Conversion . . . . .	33
11---Safety and Hazards . . . . .	34
12---Separation, Sorption, Purification and Production . . . . .	39
13---Hydrogen Liquefaction . . . . .	45
14---Hydrogen Storage, Transfer and Handling . . . . .	46
15---Thermal Insulation . . . . .	51
16---Pressurization and Stratification . . . . .	53
17---Pumps, Valves, Bearings and Seals . . . . .	54
18---Density, Flow, Liquid Level and Other Instrumentation . . . . .	56
19---Standards . . . . .	60
20---Patents . . . . .	60

## CONTENTS (CONT.)

21---Aircraft Applications . . . . .	62
22---Ground Transportation Applications . . . . .	63
23---Space Applications . . . . .	64
24---Nuclear Applications . . . . .	70
25---Electrolysis and Pyrolysis . . . . .	73
26---Energy Policy . . . . .	75
27---Economic Factors . . . . .	77
28---Environmental Factors . . . . .	79
29---Energy Conservation . . . . .	80
30---Energy Storage . . . . .	81
31---Solar Power . . . . .	82
32---Solar Sea Power . . . . .	84
33---Electrical Power . . . . .	85
34---Geothermal Power . . . . .	87
35---Nuclear Fission . . . . .	88
36---Nuclear Fusion . . . . .	91
37---Natural Gas/LNG/SNG . . . . .	93
38---Coal Gasification . . . . .	100
39---Petroleum . . . . .	104
40---Other References . . . . .	106
AUTHOR INDEX . . . . .	107

# HYDROGEN-FUTURE FUEL - A BIBLIOGRAPHY (WITH EMPHASIS ON CRYOGENIC TECHNOLOGY)

N. A. Olien and S. A. Schiffmacher

This NBS Technical Note is a compilation of references dealing directly and indirectly with the possible future use of hydrogen as a fuel. The references were selected using an automated information system operated by the Cryogenic Data Center. This bibliography of references emphasizes the use of cryogenic technology in the hydrogen field. Articles are indexed under 40 subject headings and an author index is included. Over 1600 references are included in this bibliography.

Key words: Cryogenic technology; data; energy; fuel; hydrogen; hydrogen properties; LNG/SNG; production; safety; storage

## INTRODUCTION

The Cryogenic Data Center was established in 1958 to assist the staff of the Cryogenics Division, other organizations within the National Bureau of Standards, other government agencies and private industry, in keeping up with the flood of information in this multidisciplinary field.<sup>(1,2)</sup> The field of cryogenics is, after all, defined by a temperature range rather than by subject or discipline. As time has gone on it has been necessary to reassess, on several occasions, the breadth of information being entered into the Cryogenic Data Center's Information System. This has been necessary because cryogenics is a growing field and with a relatively constant staff it has

not been possible to keep up with the corresponding growth in the literature. Decisions regarding which areas can be covered to less depth and those requiring expansion of our efforts have always been made in concert with the staff of the NBS-Cryogenics Division and other technical people in the cryogenics industry. The last major redirection took place in early 1973. The result was a net change of about 25 percent in our coverage of the current literature in order to adequately cover the field encompassed by the present bibliography. We also began publishing a quarterly titled Hydrogen-Future Fuel which is issued each August, November, February and May.<sup>(3)</sup> The quarterly and this publication utilize the Data Center's Information System as the source of the references contained in each. These efforts within the Cryogenic Data Center were done in concert with a much larger effort in other sections of the NBS-Cryogenics Division. These efforts were concerned with production, storage, applications, materials compatibility, metrology, transmission and other systems involving cryogenic hydrogen. The results of these efforts will be summarized in a National Bureau of Standards Special Publication to be published in 1975.

One other effort of the Cryogenics Division bearing on the subject of cryogenic hydrogen should be mentioned at this point. Since late 1972 the Cryogenic Data Center has been locating, cataloging,

and abstracting all available documents dealing directly and indirectly with hydrogen safety. This work has been sponsored by the National Aeronautics and Space Administration's Aerospace Safety Research and Data Institute (ASRDI) at the Lewis Research Center, Cleveland, Ohio. The aim has been to supply input information for a large on-line information bank which will serve as a national resource with regard to aerospace safety. We have also been engaged in preparing, during the past year, a hydrogen properties handbook, which will bring together in one publication all available data on hydrogen properties as well as giving recommended values. This document is in editorial review and will be published as a NASA Special Publication similar to one we prepared on oxygen a few years ago. <sup>(4)</sup>

We have tried to make the present publication as complete as possible, but we would appreciate additional references from any of our readers who may see an omission. As the title states, this publication emphasizes cryogenic hydrogen and as such is meant to complement rather than duplicate the bibliography edited by Cox. <sup>(5)</sup>

We plan to keep this bibliography current by means of future issues of Hydrogen-Future Fuel, the quarterly mentioned above.

Comments or additions should be sent to the attention of the first author at:

Cryogenic Data Center  
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National Bureau of Standards  
Boulder, Colorado 80302



The bibliography lists the references under 40 subject headings. A given reference can be listed under more than one heading. The subject headings correspond with those used in the previously mentioned quarterly and will correspond to those of future issues of the same publication. A complete author index is also included.

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TECH., ATLANTA, AUG 8-10, PAPER-I-3  
(1973)

# AUTHOR INDEX

NUMBERS REFER TO THE SUBJECT HEADINGS UNDER WHICH THE REFERENCE IS LISTED  
AN ASTERISK INDICATES FIRST AUTHOR

ABOULLINA, S.B.	4*	AYOELOTT, J.C.	16* 23*
ABERTH, E.R.	12	AYRES, J.F.	24*
ABRAHAM, B.M.	25*	AZOU, P.	7
ABRAMENKO, T.N.	4 8		
ACCINELLI, J.B.	17* 23*	BACKHAUS, H.	22* 37*
ACKERMAN, A.J.	35*	BAGGE, C.E.	2 29
ADAIR, T.W., III.	4	BAGOTSKII, V.S.	40*
AOAMS, L.	14*	BAILEY, C.A.	1* 9
AOAMS, R.G.	6 18 23	BAILEY, R.	2* 26*
ADAMS, R.O.	4* 12*	BAKER, B.L.	30 33
ADAMS, S.	4	BAKER, W.R.	24
AOOY, F.	2*	BALCOMB, J.O.	22 23* 25 35 37
ADELBERG, M.	9* 15*	BALOWIN, M.S.	33*
AHRENS, T.J.	5	BALOWIN, R.B.	4* 8*
AIT-LAOUSSINE, N.	37*	BALEK, V.	18*
AKHTAR, S.	38	BALOGA, J.O.	8
AKINS, J.E.	2*	BALZHISER, R.E.	2* 35*
AKKERMAN, J.W.	14* 23*	BAN, T.E.	21* 38*
AKULICHEV, V.A.	9* 24*	BARANOWSKI, B.	7*
ALDRIDGE, C.L.	12* 20*	BARFORO, B.O.	12*
ALEKSEEV, V.N.	9 24	BARKER, H.H.	15* 23*
ALEXANDER, A.O.	21*	BARKER, P.G.	4*
ALEXANDER, C.S.	12*	BARKOVICH, B.R.	33
ALEXANDER, O.L.	12 20	BARON, A.K.	4
ALLAM, R.J.	12* 20*	BARON, K.	10*
ALLEAUME, J.H.	11* 14* 20*	BARON, S.	2*
ALLGEIER, R.K.	14 15 23	BARRER, R.M.	9 12
ALLIN, E.J.	5	BARRON, R.	1*
ALLISON, A.C.	33*	BARTENEV, V.O.	24*
ALLSUP, J.R.	22 37	BARTLIT, J.R.	14 16
ALMAZOV, O.A.	12	BARTON, J.E.	9* 16* 23*
ALVAREZ DE TOLEDO, F.	37*	BASOV, N.	36*
ALTSHULER, L.V.	5*	BASSET, J.M.	12
ANDERSON, A.H.	4*	BASSLER, F.	31*
ANDERSON, J.H.	32*	BASTIEN, P.	7
ANDERSON, J.H., JR.	32	BAUOON, L.P.	11 14
ANDERSON, J.S.	7	BAUER, A.A.	35
ANDERSON, L.L.	40*	BAUER, H.J.	7
ANDERSON, L.M.	9 17	BAUGHMAN, M.L.	27*
ANDERSON, M.S.	11 14 15 21	BEARO, C.S.	17*
ANDERSON, R.E.	16	BECCU, K.O.	30*
ANDERSON, R.J.	2* 40*	BECHTEL, S.O., JR.	2*
ANORZEJEWSKI, S.	35*	BEDE, G.	2*
ANGERHOFER, P.E.	4 5 6	BEENAKKER, J.J.M.	4
ANISIMOV, S.I.	5*	BEGHI, G.	3* 14* 27*
ANTHONY, O.B.	38*	BELL, G.A.	15 23
APPLEBY, A.J.	3 28	BELL, T.N.	8
ARAI, Y.	8	BELUSHKINA, A.A.	24
ARENOT, F.	30	BENOER, C.F.	5
ARGUNOVA, V.I.	8	BENOT, P.J.	24 35
ARIAS, J.A.	10*	BENNETT, E.F.	37*
ARKHAROV, A.M.	1* 13*	BENNSKY, G.M.	37*
ARKHIPOV, V.T.	15	BENVENUTI, C.	12* 17*
ARNETT, R.W.	9* 16*	BEREMANO, O.G.	23
ARTSIMOVICH, L.	36*	BERESTENKO, V.M.	4* 6*
ASEEV, I.V.	11* 18*	BEREZNYAK, N.G.	4* 8*
ASH, R.	9* 12*	BERG, C.A.	29*
ASHWORTH, R.A.	33* 38*	BERGMAN, B.	37*
ASSELINEAU, L.	8	BERGSTROEM, S.	23* 31*
ASTROV, O.N.	4	BERLINSKY, A.J.	5
ASTY, M.	7*	BERNSTEIN, H.	11*
ASVIYAN, M.B.	7*	BERNSTEIN, J.T.	11* 18*
ATHOOD, M.T.	38	BERNSTEIN, R.B.	4
AUER, P.L.	2* 26*	BERRY, W.	21*
AUSTIN, A.L.	2* 3* 21* 22*		

# AUTHOR INDEX (CONT.)

BERTSCH, M.	30*					BRENTARI, E. G.	9*
BERY, R. N.	27*	37*				BRESLAVETS, K. G.	12*
BESKE, H. E.	18*					BRESSLER, R. G.	9*
BEYCHOK, M. R.	38					BREWE, D. E.	7* 9* 17*
BEZLER, P.	36					BREWER, G. D.	21*
BICKERMANN, A.	5*					BRICKWEDDE, F. G.	4
BIEGANSKI, Z.	13					BRINKWORTH, B. J.	31*
BIEM, W.	5					BRITZ, B.	38
BIGGE, W. R.	18	19				BROLLEY, J. E.	24*
BILL, R. C.	7*					BROOKES, L. G.	2* 27*
BILLINGS, R.	22*	28*				BROVMAN, E. G.	5*
BIRON, D.	11	14				BROWN, A. E.	18
BISPLINGHOFF, R. L.	2*	26*				BROWN, D. E.	10*
BISSELL, W. R.	9*	17*				BROWN, D. W.	34*
BIXLER, W. O.	7	11	14	23		BROWN, N. J.	4
BLACK, I. A.	15					BRUCE, R. N.	37*
BLACK, J. H.	10	12				BRUNENKANT, E. J.	2 26 35
BLAGOI, YU. P.	4	5	8	10	12*	BRUN-TSEKHVOI, A. R.	12*
BLAND, M. E.	9*					BUBEN, D.	12 20
BLANKENSHIP, O. T.	12*	31*				BUBNITSKII, V. A.	14*
BLATT, M. H.	9	14*	16	23*		BUCKINGHAM, P. A.	27 37
BLEAKNEY, R. A.	2*	11*	37*			BUCKLEY, W. D.	8
BLIGH, B. R.	12	20				BUGROV, V. P.	4* 7* 12*
BLINKOV, E. L.	14					BUKHBINDER, I. L.	5
BLOCK, F. R.	25	27				BULLOCK, F. W.	24*
BOCCIO, J.	9	11				SULLOCK, R. E.	4 5 15* 24*
BOCK, E. H.	9	14	23			BUMP, T. R.	35*
BOCKRIS, J. O. M.	3*	28*				BUNO, K.	34*
BOOLE, W. W.	26*	37*				BUPP, F. E.	18* 23*
BOERNKE, F.	33*					BURBANK, T. H.	33*
BOGOANKEVICH, O. V.	5*					BURCIN, R. J.	27 37
BOGGS, S. A.	5*					BURGBACHER, G.	37*
BOGOYAVLENSKII, I. V.	4	8				BURGESSON, O. A.	18*
BOHN, T.	2*					BURGESS, D. S.	11* 12 14 37*
BOISSIN, J. C.	12*	20*				BURGHOFF, H.	5* 24*
BOLEZ, C. A.	33	30				BURGMANS, A. L.	4*
BOLLINGER, L. E.	1*					BURKE, D. P.	2*
BOLSHUTKIN, O. H.	5*					BURKE, J. C.	31
BOLTON, G. H.	38*					BURNET, F. M.	31*
BONDERENKO, A. G.	11	18				BURNIER, P.	40*
BONNER, T. F., JR.	3	21	29			BUSH, A. F.	22*
BOODA, L. L.	12*	25*	31*	32*		BUSKIRK, O. L.	15 23
BOOM, R. W.	30*					BUTKEVICH, K. S.	1
BOOTH, L. A.	22*	25*	35*	37*		BUYANOV, R. A.	10* 13* 20* 35*
BORESKOV, G. K.	4	*					
BORGHI, M.	12	18					
BORGMANN, O.	7						
BORISOV, S. F.	4*	9*				CAOY, E. C.	16* 17* 23*
BORONIN, V. S.	4	12*				CAINE, G. H.	16* 17*
BORZUNOV, YU. T.	18*	24*				CALACO, J. P.	31
BOSEF, O.	23					CALLESON, R.	21
BOUDET, R.	37*					CAMERON, H. M.	23
BOURGAREL, M.	16*					CANUTO, V.	5*
BOURGUET, J. M.	27*	37*				CAPOZZI, V. F.	10*
BOWEN, O.	38					CAREN, R. P.	9* 15*
BOWEN, R. G.	34*					CARLSON, F. B.	38*
BOYD, J. W.	23*					CARLSON, J. N.	12
BOYER, K.	36*					CARNE, M.	11 37
BOYLE, R. R.	2	33				CARPETIS, C.	3*
BRAOSHAW, R. D.	9*	10*	23*			CARTER, G. T.	1* 11*
BRADY, H. F.	14	16				CARTER, H. G.	4* 5*
BREAKSPERE, R. J.	12*					CARTER, T. A., JR.	17*
BRECHNA, H.	33*					CARTIER, P. G.	12*
BREEDVELD, G. J. F.	4*	8*				CASKEY, G. R., JR.	0
BRENNAN, J. A.	9	14				CASSUTT, L. H.	11* 14*
						CATALAND, G.	18* 19*



# AUTHOR INDEX (CONT.)

CATALOO, C.E.	11	14				COOK, G.L.	39
CATCHPOLE, S.	35*					COOPE, J.A.R.	4
CATTON, I.	9*	14*	23*			COPPACK, C.P.	37*
CHALLIS, H.	39*					COSTON, R.M.	15*
CHALOU, C.	15*					COTTRELL, A.	2* 7*
CHANDLER, W.A.	14*	15*	23*			COVAULT, C.	3* 21*
CHANG, C.C.	12*					COVER, A.E.	38*
CHANG, E.S.	4*					CRAIG, R.S.	7
CHANG, H.Y.	7*					CRANSTOWN, G.K.L.	7*
CHANG, K.S.	9					CREAGAN, R.J.	35*
CHAO, R.E.	12*	25*				CROFT, A.J.	1*
CHAPMAN, D.	33*					CROWE, B.J.	23* 46*
CHAUDRON, J.	8*					CROZIER, T.E.	8*
CHELTON, O.B.	6	9	13	17		CRUM, R.J.	9 24
CHEN, CHIANG-LIU	38*					CRUZ, J.E.	13
CHERRY, W.R.	2	31*	33*			CRYNES, B.L.	27 38
CHERVENAK, M.C.	38					CSOM, G.	2*
CHERY, D.	4	8				CUMMINGS, D.L.	14*
CHI, J.W.H.	9					CUNNINGHAM, J.E.	9* 14* 23*
CHILOS, G.E.	4	5	6	7*		CUNNINGTON, G.R.	9 15* 23*
CHILTON, C.	2	26				CURRAN, T.	7
CHIN, L.	37						
CHIRUKHIN, B.V.	4					D ANDREA, L.	37*
CHITRE, S.M.	5					DABORA, E.K.	11
CHO, B.Y.	18					DALAL, V.	2* 28*
CHOPEY, N.P.	3*					DALEY, H.F., JR.	11* 14*
CHOPRA, V.	18*					DALGARNO, A.	10* 12*
CHORNET, E.	7	12				DAMERELL, A.P.	24
CHRISTENSEN, R.T.	12	26				DANEY, D.E.	6* 9* 12* 17* 18
CHUANG, S.-Y.	3*					DANIEL, G.	2* 29*
CHUPRINA, G.O.	12					DANIELS, F.	31*
CIOCHINA, A.	4					DANILOV, N.D.	11 18
CLARK, J.A.	9*	16*	23*			DANILOWICZ, R.L.	4 5
CLAUTICE, W.E.	7*					DARLING, A.S.	12*
CLEMENT, J.O.	33	35				DARMSTADTER, J.	2*
CLEMENT, R.	16					DARWEGER, K.-H.	2* 39*
CLEWLEY, J.D.	7*					DAS, M.	18
CLOYD, D.R.	11*	14*				DAS, G.	8
COBLE, J.A.	2*	4	12			DAS, K.B.	11* 18*
COCHRAN, N.P.	38*					DAUNT, J.G.	5*
COE, H.H.	9*	17*				DAVEY, G.	9
COELING, K.J.	9*					DAVID, E.E., JR.	2* 26*
COHEN, W.	3*	23*				DAVIES, A.M.	4
COLCLOUGH, A.R.	18*	19*				DAVIES, H.S.	37*
COLEMAN, T.G.	24					DAVIS, J.C.	37*
COLENBRANDER, C.B.	18*					DAVIS, W.B.	2 39
COLLIER, A.R.	35*					DAWBARN, R.	4* 12*
COLLIER, R.S.	18*					DAY, G.V.	37*
COMBETTE, P.	7					DAYAN, V.H.	11 18
COMMANDER, J.C.	14*					DE BENI, G.	3* 12* 25* 25*
COMMONER, B.	2	27	28			DE CARLO, J.A.	3
COMPTON, J.P.	18*	19*				DE CLAVIERE, G.	23*
COMTOIS, W.H.	2	27*	33	34*		DE REMIGIS, J.	4 8
CONNELLY, R.E.	9	17				DEAM, R.J.	2* 27* 39*
CONNER, J.G.	35*					DEAN, F.E.	11 37
CONNOLLY, W.W.	11*	14*				DEAN, J.W.	4* 13
CONOPHAGOS, E.	7*					OEB, S.	13*
CONSTABLE, J.H.	5*					DECHER, R.	30*
CONTE, R.R.	15					DEESE, J.H.	11 23
CONTRERAS, W.	5*	9*	23*			DEJACE, J.	14 27
CONWAY, H.L.	37*					DEJOU, A.	33* 35*
COOK, C.S.	2*					DELAPALME, B.	25*
COOK, D.B.	4					DELCROS, P.	24*
COOK, E.	2*	26*				DENIS, L.H.O.	11* 14* 20*
COOK, G.A.	5	6					

## AUTHOR INDEX (CONT.)

DENIS, S.	29* 32*	ECORD, G. M.	7* 11* 14* 23*
DENISOV, S. P.	24*	EDELMAN, R. B.	9* 21*
DENTON, W. H.	1	EDELMANN, E.	33*
DEDRANI, S. C.	4	EDESKUTY, F. J.	9 11 14 16* 18 19*
DERICBOURG, J.	10*		22 24
DERINGTON, J. C.	11* 18* 23*	EDIE, L. D.	33*
DERNIGOHOSSIAN, G.	24*	EDMISTER, W. C.	4*
DESAI, R. C.	4	EDMONDS, D. K.	9* 14*
DESAI, R. R.	15* 20*	EDESE, R.	11*
DESMOND, R. M.	8	EHRENKRANZ, T. E.	11* 23* 24*
DESSAU, P. P.	7* 17*	EKLUND, L. G.	40
DEVEIRMAN, R. M.	2*	EL-NDWEHI, M. A.	30
DIAMOND, H.	10	ELDER, J. L.	38*
DICKSON, P. F.	12	ELEFANT, D.	7
DIGIALDONARDO, A.	4 12	ELEY, D. D.	4* 10 12
DILLER, D. E.	19 37	ELISTRATOV, V. V.	24
DIMITRIU, I.	12 20	ELLERBRUCH, D. A.	18
DINNEEN, G. U.	39*	ELLES, H. C.	2* 37*
DIVON, D. R.	4	ELLIOTT, J. R.	9 14 23
DIXON, A. G.	12*	ELLIOTT, M. A.	37* 38
DIXON, L. T.	12	EMERSON, J. D.	2
DMITREVSKII, YU. P.	24	EMMETT, J. L.	5* 24 36*
DOBNER, S. I.	37	ENGLAND, W.	4*
DOCTOR, R. O.	2*	ENGLMAN, R.	5*
DOHN, G. D.	15 20	ENGSTROM, W. L.	7
DOLOMANOV, E. G.	9*	EPP, R.	9
DOONABEDIAN, M.	14* 23*	EPSTEIN, H. M.	35
DOONATH, E. E.	20* 38	EPSTEIN, M.	16*
DOONOI, M. G.	4*	EQING, R. C.	18*
DOONDVAN, P.	2* 31*	ERDOSI, P.	2*
DOWLING, G. R.	8*	ERENTS, S. K.	5* 12*
DRAEGER, A. A.	37* 39*	ERICKS, L. J.	7
DRAPER, E. L., JR.	1* 36*	ERDKHIN, B. T.	14
DREIFKE, G. E.	40*	ESCHER, W. J. D.	3* 12* 21* 25* 27* 28*
DRESSEL, J. H.	33		31* 32* 38*
DRUMHELLER, K.	31*	ESELSON, B. N.	4* 5*
DUBYAGA, N. A.	3*	ESELSON, V. B.	5
DUERRE, D. E.	4	ESPIL, J.	21
DOUGAN, D. W.	23* 35*	ESTRUP, P. J.	7
DUKE, W. M.	1	ETTERS, R. D.	4 5*
DULNEV, G. N.	8*	EVANS, O. M.	37*
DUNCAN, D. C.	2	EVANS, M. J. B.	12*
DUNLOP, P. J.	4	EWALD, R.	9*
DUNTHORN, D. I.	12 20	EWING, G. E.	4*
DUPAS, C.	5*	EYRING, H.	12
DUPONT, A. A.	21*		
DUPREE, W. G., JR.	1* 26*	FABER, K.	7*
DURANA, S. C.	5*	FABIAN, R.	12 37
DURM, M.	12* 18*	FALCONE, C. A.	33*
DUTKIEWICZ, B.	27* 37*	FARBER, E. A.	11* 18* 23* 31
DUVAL, X.	10	FARKAS, A.	1*
DWYER, R. F.	5* 6*	FARROW, H. M.	17*
DY, K. S.	9	FAUSKE, H. K.	9 14
DYACHKOV, E. I.	8* 24*	FAUST, C. L.	30
DYKHNO, N. M.	4 12	FAHCETT, H. H.	11* 37*
DYMOND, J. H.	4*	FEDCHENKO, V. S.	7 11
DYNIN, E. A.	5	FEDORDOVA, M. F.	12*
DYSON, P.	22 26	FELDKIRCHNER, H. L.	37 38
		FELDMANN, H. F.	40
EASTLUND, E. J.	36	FELIX, F.	2* 26* 27*
ERNEF, C.	5*	FELLS, I.	2* 26*
ECCLFSTON, D. B.	22* 37*	FELTERMAN, D. E.	3 21 28
ECKERT, E. R. G.	31*	FENN, J. B.	4
ECONCMOS, C.	9 11	FENNER, W. R.	4*

AUTHOR INDEX (CONT.)

FICKETT, A.P.	12	25				GELBSHTEIN, A.I.	12		
FILIP, R.	12	20				GELO, P.V.	12	20	
FINK, C.R.	35					GELPERIN, I.I.	4		
FISCH, G.	4	12				GEORGE, C.	12	20	35
FISCHER, R.L.	17*					GEORGIUS, H.K.	16		
FISHER, C.J.	5	8				GERASIMOV, YU.F.	4		
FISHER, J.L.	2*					GERBER, A.	2*	28*	
FLANAGAN, T.B.	7	12				GERMANOV, A.I.	24		
FLEMING, O.K.	12*	37*				GERSHMAN, R.	9		
FLEMING, R.B.	33					GERZHIN, A.G.	15		
FLEMING, R.O.	22*	37*				GHOSH, S.	37		
FLETCHER, R.F.	11*	23*				GIARRATANO, P.J.	6	9	
FLEURY, P.A.	4*	5*				GIBBS, E.E.	33		
FLIEOER, W.G.	14*					GIBBS, P.W.	4*		
FLOUX, F.	36					GIBSON, C.	37*		
FLYNN, E.R.	24*	35*				GIESE, J.M.	27	37	
FLYNN, J.A.	11*	37*				GIESE, J.R.	2*		
FOERG, W.	8*	12*	20*	37*		GIESEING, O.E.	14	23	
FOLEY, G.	2*					GIFFORO, W.E.	13*		
FOLKERTS, K.O.	14*	23*				GIGER, U.	24*		
FOLMAN, M.	4*	12*				GILINSKY, V.	35*		
FORBES, F.S.	16*					GILLE, J.P.	15*	32	
FORNEY, A.J.	37*					GILLES, A.P.	14	20	
FORREST, H.	4					GIRARO, B.	30*		
FORSYTH, E.B.	40*					GLAGOLEV, V.V.	17*		
FOX, G.R.	33					GLASER, P.E.	15*	23*	31*
FRAAS, A.P.	26*	28*	36*			GLOVER, W.J.	14*	17*	18*
FRAGA, E.	18	23				GLUCK, D.F.	9	14	23
FRAIZE, W.E.	22*	26*	28*			GLUCKMAN, M.J.	37*		
FRANSEN, J.O.	7*					GOBIN, P.F.	7		
FRANK, H.J.	37*	39*				GOOIN, A.	24*		
FRANK, M.E.	37*	38*				GOLOBER, R.S.	12	20	
FREORICKSON, G.	15*	23*				GOLOENBERG, E.S.	14		
FREORICKSON, H.	38*					GOLOMAN, I.I.	4*		
FREEOMAN, R.	30					GOLOSHEIN, V.A.	24*		
FREEOMAN, S.I.	2*	23*				GOLOSMITH, M.	34*		
FREEMAN, B.	9*	15*				GOLOVANOV, L.B.	18	24	
FREIOMAN, S.	33					GOLOVINTSOV, V.V.	1		
FRIEOLANDER, G.J.	2*	26	29	35*		GOLTISOV, V.A.	12*	20*	
FRIEOMAN, Z.	5					GOLUBEV, I.F.	8		
FUJIO, M.	5*					GOMER, R.	12*		
FULLER, M.E.	4	8				GOMEZ, L.A.	5*		
FULTON, O.L.	3*					GONSALVES, L.M.	31		
FUNK, J.E.	25*					GONZALEZ GARCIA, F.	10		
FURNO, A.L.	11	24				GOOOWIN, R.O.	4		
FURUKAWA, G.T.	18*	19*				GOROON, R.L.	33*		
FUSHIMI, M.	28*	31*				GOROETSII, V.V.	4	8	
						GORSHKOVA, L.S.	10		
GAIFUTOINOVA, R.K.	10					GOSS, W.P.	2*		
GAINES, G.B.	2					GOTO, R.	12*		
GAINES, J.R.	5*					GOTOH, S.	8*		
GALLAGHER, J.S.	4					GOUGH, W.C.	36*		
GALLAGHER, R.J.	4*					GOUSE, S.W., JR.	22	26	38*
GAMBS, G.C.	2*	37*				GRACKI, J.A.	4*		
GARONER, N.	38*					GRAHAM, E.B.	37*		
GARVEY, J.R.	37	38*	39			GRAHAM, R.W.	9*	24*	
GARWIN, R.L.	20*	30*				GRAINGER, L.	38*		
GASS, O.M.	3					GRALNICK, S.L.	5*	24*	36*
GAUCHER, L.P.	2*	32*				GRASSI, G.	14	27	
GAUMER, L.S.	12	20				GRAY, C.G.	4		
GAY, A.	20*	23*				GRAY, O.E., EDITOR	9*		
GAYLE, J.B.	11*	23*				GRAY, J.L.	35*		
GEOANKEN, A.	5*					GRAY, R.O., JR.	40		
GEILIKMAN, B.T.	4*					GREBINNIK, V.G.	24		
						GREENE, M.I.	12	37	



# AUTHOR INDEX (CONT.)

GREGORY, O.P. 3\* 14\* 37\* 40\*  
 GREGORY, J.W. 23\*  
 GREKEL, H. 37  
 GRENON, M. 37\*  
 GREY, J. 2\* 36\* 37\* 39\*  
 GRIEGER, G. 36\*  
 GRIFFITH, E.J. 3\* 22\*  
 GRIGOREV, F.V. 4\*  
 GRIGOREV, V.N. 4 5  
 GRIGORIEFF, W.W., ED. 2\*  
 GRISHIN, V.V. 4\* 9\*  
 GROH, E.A. 34  
 GROLMES, M.A. 9\* 14\*  
 GROSE, L.T. 34\*  
 GRUENOLER, K.-H. 37  
 GRUMER, J. 11\* 14\*  
 GUBBINS, K.E. 3  
 GUENOCHÉ, H. 11\*  
 GUESEWELL, D. 3\* 24\*  
 GUNNING, G.O. 2  
 GUPTA, S.K. 3\*  
 GURKO, V.F. 2\*  
  
 HAAS, G.M. 31  
 HAEFELE, W. 35\* 36\*  
 HAETTINGER, G.C. 14\* 15\*  
 HAFNER, A., III 11 14 23  
 HALACY, D.S., JR. 31\* 35\*  
 HALE, O. 37\* 38\*  
 HALE, J.G. 2 27 39  
 HALL, C.A. 32\*  
 HALL, K.W. 10 12  
 HALL, L.R. 7\* 11\* 14\* 23\*  
 HALL, P.G. 12\*  
 HALL, W.J. 4 9 17  
 HALLET, N.C. 11  
 HALLMAN, N.M. 10\* 20\*  
 HALMGEY, E. 30\*  
 HALSTED, M.P. 4  
 HALZL, J. 2  
 HAMA, J. 5  
 HAMLET, J.F. 6\* 16\* 23\*  
 HAMMOND, A.L. 2\* 26\* 27\* 29\* 31\* 35\*  
  
 HAMMOND, J.C. 12\* 14\* 20\*  
 HAMMOND, R.P. 2 28  
 HANASAKA, T. 12  
 HANAU, H. 17\*  
 HANNEMAN, R.E. 12 25\*  
 HANSON, J.A. 12 31 32  
 HAROIE, O. 7\*  
 HARDISON, E.P. 23  
 HAROY, E.F. 37\* 39\*  
 HARGREAVES, C.M. 13  
 HARIKEL, G. 9 24  
 HARMSEL, H.T. 4\*  
 HARNEY, B.M. 37 38  
 HARRIS, A.B. 5\*  
 HARRIS, C.L. 7 17  
 HARRIS, J.A., JR. 7\*  
 HARRIS, K.R. 3\*  
 HARRIS, S. 2\*  
 HARRIS, S.P. 11 18  
 HASELDEN, G.G. 1\*

HASSENZAHN, W.V. 30\* 33\*  
 HASTINGS, L. 9 23  
 HASWELL, C.K. 30\* 40\*  
 HATCH, B.O. 33\*  
 HAUSER, I.G. 37 39  
 HAUSER, L.G. 2\* 26\* 29\* 33\*  
 HAUSZ, W. 2\* 3\* 26\* 28\*  
 HAWKE, R.S. 4\*  
 HAY, H.R. 31\*  
 HAYOUK, W. 8\*  
 HAYES, J.E. 36\*  
 HAYWARD, O.O. 4\*  
 HAZELTON, J.P. 37\*  
 HEARD, J.C. 23  
 HEBBOEN, O. 37\* 38\*  
 HEGARTY, W.P. 37\*  
 HEIKE, TH. 26 37  
 HEINICKE, J. 31  
 HEINZ, W. 30  
 HELLER, W. 2 27 28  
 HENAHAN, J. 34\*  
 HENOE, E.A. 18 23  
 HENORICKS, R.C. 4\* 9\*  
 HENNY, K.A. 33  
 HENRY, J.P., JR. 37\* 38\*  
 HEPPLER, P. 1\* 37\*  
 HERBERT, J.B. 36  
 HERENOEEN, R. 22  
 HERNANDEZ, H.P. 11\* 24\*  
 HEROLD, A. 12  
 HERONEMUS, W.E. 33\* 35\*  
 HERR, K.C. 18 23  
 HERR, P.N. 23  
 HESS, R. 5\*  
 HERTZBERG, A. 36\*  
 HESS, R. 4\* 5\*  
 HESSEL, O. 2  
 HEUBLER, J. 37\*  
 HICKEL, W.J. 34\*  
 HICKMAN, W.H. 14 15 23  
 HIGGINS, G.H. 37\* 38\*  
 HIGH, R.W. 11\* 23\*  
 HILOEBRANO, J.H. 3\*  
 HILOEBRANOT, A.F. 31\*  
 HILL, G.R. 38\*  
 HILLER, H. 37  
 HILLMAN, J.S. 4 8  
 HIMMELBERGER, F. 11\* 14\*  
 HINCKLEY, R.B. 11\* 37\*  
 HINES, W.J. 9 14 23  
 HIRABAYASHI, H. 24\*  
 HIRSCH, R.L. 36\*  
 HIRST, E. 21\* 22\* 26\* 29\*  
 HIZA, M.J. 8 12 18 37  
 HOAG, E.H. 14 23  
 HOBART, H.F. 18\*  
 HOBSON, J.P. 12\*  
 HOCHANADOL, D.E. 2\* 37\* 39\*  
 HOEHLEIN, B. 3\*  
 HOERING, M. 38\*  
 HOFFMAN, K.C. 3  
 HOFFMAN, M.L. 12\* 20\*  
 HOLDER, H. 27 37 38  
 HOLLEMAN, G.W. 25\*  
 HOLMES, J.F. 35\*

## AUTHOR INDEX (CONT.)

HOLZBRECHER, H.	18					JEFFERIES, K.S.	23
HOOVER, W.G.	5*					JEFFERIES, M.J.	4* 33*
HOPE, C.J.	12					JEFFS, A.T.	14*
HOPKINS, J.C.	4					JEFFS, E.	30*
HORO, J.	3*	9	11*	14	17*	JELLISON, J.C.	18
HORGAN, A.M.	12*					JENKINS, W.R.	31
HORIGOME, T.	31*					JHON, M.S.	12
HORLITZ, G.	9*	24*				JOCKEL, H.	37*
HOTTEL, H.C.	37*	38	39*			JOHANSON, E.S.	38
HOULOER, J.M.	14*	20*				JOHNSON, C.A.	38*
HOUPERT, A.	8					JOHNSON, J.E.	21* 27* 37*
HOUSTON, A.C.	12					JOHNSON, J.K.	12
HOWARD, J.B.	38					JOHNSON, R.L.	7 17
HOWARD, P.R.	33*					JOHNSON, V.J.	4
HSU, YIH-YUN.	9	24				JONES, C.H.	37*
HUANG, O.H.	9*	20*	23*			JONES, O.M.	12
HUBBARO, W.B.	5*					JONES, O.W.	33
HUBBARO, W.B.	5*					JONES, F.L.	38*
HUBBERT, M.K.	2*	27*	37*	39*		JONES, H.S.	37*
HUEBEL, J.G.	4					JONES, J.K.	12*
HUEBLER, J.	37*	38*				JONES, L.W.	3*
HUGHES, J.L.	18*	23*				JONES, M.C.	6* 9*
HUGHES, W.L.	25*	30*				JONKE, R.J.	14* 15* 16* 18* 23*
HUNT, J.L.	4					JOROAN, H.L.	36
HUNTINGTON, S.W.	30	40				JORDAN, P.A.	12*
HUTCHINSON, H.L.	10*					JORTNER, J.	5
HYATT, H.A.	4					JOYCE, J.P.	23*
						JUENTGEN, H.	35 38
						JURGEN, R.K.	26* 29*
IAMMABTINO, N.R.	26*					KAFKA, E.M.	1 37
IBELE, W.E.	8*					KAGAN, G.E.	12 20
ICHIM, O.	12	20				KAGAN, YU.	5
IHLE, H.	36*					KAGANER, M.G.	1* 15*
ILENKO, B.R.	12					KALINA, T.	37 38
ILINSKIY, A.A.	12					KALINCHEV, V.A.	7*
ILLEI, V.	2					KALININ, B.A.	4 8
INOAN, L.A.	5					KALININ, N.V.	4
INORA, R.N.	12*					KALININA, E.I.	4*
INGLIS, O.R.	35*					KALVINSKAS, L.A.	9
INOKUCHI, H.	10					KAMINISHI, G.	8
INSEPOV, Z.A.	8*					KANOA, E.	3*
INTERRANTE, L.V.	12*	20*	25*			KAPITANSKII, V.R.	12*
IOMTEV, M.B.	8					KAPRAL, R.	4
IOROANSKII, S.V.	5*					KARADY, P.	2* 27*
ISAACS, J.O.	32*					KARNATSEVICH, L.V.	4 8
ISHIMOTO, H.	5*					KARPENKO, G.V.	7* 11*
ISHIZAKI, K.	5	7				KASHTANOV, E.M.	24
ISHIHARA, N.	24					KATSOBASHVILI, YA.R.	12
ITO, A.	29*	35*				KAUFFMANN, W.M.	14* 22* 37*
IVAKIN, B.A.	8*					KAWAZURA, H.	10
IVASHKEVICH, E.V.	4					KAZAVCHINSKII, YA.Z.	8*
IVES, R.P.	17*					KEELER, R.N.	5
IYER, K.J.L.	7*					KEIJSER, R.A.J.	4*
						KELLAM, J.M.	4
JACKSON, L.R.	11*	14*	15*	21*		KELLER, C.W.	14* 15 23
JACKSON, W.O.	40*					KELLER, H.H.	4*
JACOBS, R.B.	9*	14*				KELLER, W.E.	18* 30 33
JACOBS, R.J.	14*					KELLEY, C.S.	12* 20*
JAEGER, K.	24*					KELLY, P.J.	23*
JALILI, M.	12*					KEMP, C.C.	2
JAMERSON, C.D.	12	18	20			KEMP, L.J.	18* 37*
JANICEK, P.	12*	13*				KENOLE, O.W.	16 17 23
JANKA, J.	37					KENNEY, V.P.	24*
JARBOE, T.R.	24*					KENT, M.F.	2* 33*

# AUTHOR INDEX (CONT.)

KERENYI, A.O. 33\*  
 KERKAM, B.F. 11\*  
 KESTIN, J. 4\*  
 KETTANI, M.A. 31\*  
 KHALATNIKOV, I.M. 5\*  
 KHODAKOV, YU.S. 12  
 KHODOSOV, YE.F. 7\*  
 KHOLAS, A. 5  
 KHORKOV, V.F. 12\*  
 KIANG, KOH-DON 40\*  
 KIDNAY, A.J. 8\* 12\* 37\*  
 KIEFER, M.E. 12 18 20  
 KIHARA, T. 4\*  
 KIM, U.S. 12\*  
 KIMURA, L.A. 9\* 17\*  
 KIMURA, Y. 5  
 KING, A.O., JR. 8  
 KING, C.R. 9  
 KING, O.A. 12  
 KINSEY, J.L. 8  
 KIRILLIN, V.A. 33\* 37\*  
 KIRILLOV, V.A. 9\*  
 KIRK, B.S. 4  
 KIROVSKAYA, I.A. 12  
 KIRSCH, J. 37  
 KISLOW, D.H. 5\*  
 KITA, I. 24  
 KITSUNEZAKI, A. 5 36  
 KITTS, W.T. 1 11  
 KLASS, O.L. 26\* 27\* 37\*  
 KLEIN, M. 4  
 KLEMM, A. 4 8  
 KLEVATT, P.L. 15 23  
 KLIEF, K. 7 12  
 KLIWER, G. 2\* 20\*  
 KLOOSTERMAN, A.H. 27\* 37\*  
 KLOSE, E. 8\*  
 KLUMB, D.L. 40  
 KMECAK, R.A. 12\* 20\*  
 KNAPP, A.G. 12\*  
 KNAAP, H.F.P. 4  
 KNEISEL, K.M. 9 16 23  
 KOCH, D.A. 17 23  
 KOCHER, R.M. 13\* 23\*  
 KOCHURIKHIN, V.E. 12\*  
 KOEHLER, W. 4\*  
 KOGAN, V.S. 12  
 KOHLER, K.A. 7\*  
 KOHLL, A. 27 37  
 KOKES, R.J. 12  
 KOMOV, V.F. 4 9  
 KONELOW, T. 12  
 KONENKO, I.R. 10\*  
 KONOKI, K. 3\*  
 KONONOV, V.M. 11 20  
 KOR, S.K. 4\*  
 KOROLEVA, L.I. 12  
 KORMER, S.R. 4  
 KOROVSKAYA, I.A. 12\*  
 KOSLOFF, R. 4\*  
 KOSOV, N.D. 4 8  
 KOURILOVA, U. 12\*  
 KOVACH, S.M. 12 20  
 KOZIROVSKI, Y. 4 12  
 KRAMER, E. 29\*

KRATZER, M.B. 2\* 26\* 35\*  
 KRAUSE, O. 15 23  
 KRAUSE, H. 5\* 24\* 36\*  
 KREISBERG, V.A. 4  
 KREJCI, M. 12  
 KREMER, H. 37\*  
 KRIONER, K. 2\* 26\* 37\*  
 KRIEB, K.H. 33  
 KRIEGER, J.H. 2\*  
 KRIGER, V.G. 8\* 12\*  
 KRIVORUCHKO, O.P. 10 20  
 KROEGER, C.V. 2\* 27\*  
 KROKHINE, O. 36  
 KRONMUELLER, H. 7  
 KROPSCHOT, R.H. 4  
 KUHR, W.A. 23\*  
 KULEV, A.N. 4 9  
 KULKARNI, B.A. 12  
 KULYGIN, V.N. 8  
 KUMNICK, A.J. 7\*  
 KUNKEL, L.V. 37\*  
 KUPPERMAN, R.H. 2\* 29\*  
 KURLAPOV, L.I. 8  
 KURYSHKO, V.I. 7  
 KUTATELADZE, S.S. 9\*  
 KUTZELNIGG, W. 8  
 KUWADA, J.T. 34\*  
 KUZESKII, A.L. 5\*  
 KVET, K. 33\*  
 LACEY, J.A. 37  
 LACOVIC, R.F. 9 14 23  
 LADERMAN, A.J. 11\*  
 LAGRANGE, P. 12\*  
 LAGUS, P.L. 5\*  
 LAMOREAUX, R.H. 8  
 LANDIS, J.W. 35\*  
 LANOSBERG, H.H. 2\*  
 LAPP, R.E. 2\*  
 LAQUER, H.L. 33\*  
 LARIMORE, O.B. 12\* 20\*  
 LATIMER, R.E. 4\*  
 LAUOIE, H. 8  
 LAUFFER, J.R. 3  
 LAUGHTON, M.A. 2 27 39  
 LAVI, A. 32  
 LAW, S.H. 40  
 LAWRENCE, L.R., JR. 11  
 LE NEINORE, B. 4\*  
 LE ROY, O.J. 4  
 LE VALLEY, W.H. 14\*  
 LEBEDEV, R.M. 17  
 LEDNTEVA, A.V. 5  
 LEOWITH, W.A. 20\* 23\*  
 LEE, B.S. 38\*  
 LEE, J.H.S. 11  
 LEE, M. 5 9 23  
 LEES, L. 2\*  
 LEETH, G. 2 3 26 28  
 LEHRFELD, O. 23\*  
 LEITENBERGER, H. 12\* 20\* 25\*  
 LEITES, I.L. 8\*  
 LELIEVRE, J.CL. 4  
 LEMARIE, P.H. 7



# AUTHOR INDEX (CONT.)

LEMMON, A.W.	1	MAGNUSON, W.G.	37*
LEMONS, C.R.	15* 23*	MAHIG, J.	18
LEONARD, B.R., JR.	35* 36*	MAHNIG, M.	12*
LENER, R.M.	21 37	MAIDANOVSKAYA, L.G.	12
LESSLIE, R.O.	8	MAJORS, J.	14* 23*
LESTER, J.M.	14* 15* 23*	MAKHIJANI, A.B.	26* 27* 29*
LEVINE, R.O.	4	MAKSIMOV, L.S.	37* 39*
LEWIS, B.	11*	MALASHENKO, V.I.	8*
LEWIS, W.B.	2* 35* 36*	MALENKOV, I.G.	9
LEWKOWICZ, I.	24*	MALIN, H.M., JR.	34*
LICCIARDELLO, M.R.	7 9 21	MALIN, M.	2* 26*
LICHTENBERG, A.J.	26 27 29	MALININ, S.D.	9
LIEBENBERG, D.H.	9* 14* 18*	MALLOZZI, P.J.	35
LIEBGOTT, H.	12 20 25	MALUTCHKOV, O.T.	4*
LIEBMAN, I.	11 18	MALYSHENKO, S.P.	4*
LIELMEZS, J.	4*	MAMONOV, YU.V.	4* 8*
LILEEVA, J.J.	4	MANDEL, H.	2* 27* 33*
LILEY, P.E.	4*	MANDEL, M.	33* 35*
LILLEY, T.	2 26 35	MANDELNIK, B.G.	12* 37*
LINCOLN, G.A.	29*	MANN, O.B.	4 6 18* 37
LINDE, H.	12* 20*	MANNER, M.	3
LINDEN, H.R.	2* 27* 37* 38*	MANSFIELD, J.	11 23
LINDSAY, J.D.G.	30	MANSFIELD, J.A.	9* 11* 23*
LINDSTROM, R.S.	15	MANUILOV, V.G.	14
LITTLE, E.M.	30	MANZHELII, V.G.	4 5*
LITTLES, J.W.	9	MARCHELLO, J.M.	5
LITTLEWOOD, A.B.	4	MARCHETTI, C.	2* 3* 12 14* 21* 22*
LITVIN, A.K.	7		25 33* 35 37*
LIVSHITS, A.I.	12	MARCUS, H.L.	7
LO, R.E.	4* 23*	MARIANO, R.	30
LOBANOVA, G.L.	12*	MARK, J.W.	17* 24*
LOBKO, M.P.	9	MARSH, H.W.	14*
LODENQUAI, J.	5	MARSHALL, R.D.	12*
LOEF, G.O.G.	31*	MARSHALL, T.N., JR.	6* 9* 13* 23*
LOFGREN, C.L.	14* 23*	MARTIN, R.	2*
LOGAN, E.M.	1* 11*	MARTINOILL, G.H.	11
LOGINOV, A.YU.	4*	MARTYNOVA, G.P.	9
LOIKO, A.E.	4 8*	MASICA, W.J.	9 14 23
LOKUTSIEVSKII, O.V.	5	MASLAN, F.	12*
LOMBARDI, J.R.	4	MASON, H.F.	12*
LONG, G.	37* 38*	MASON, N.C.M.	37
LOOSIE, D.G.	9*	MASSARO, C.	14 27
LORD, H.C., III.	8* 18* 20*	MASUOKA, H.	8
LOTT, J.L.	3	MATHES, K.N.	4
LOTTIN, J.C.	24*	MATHEWS, J.F.	4*
LOUTHAN, M.R., JR.	0	MATHIEU, M.-V.	12
LOVINS, A.B.	2* 26*	MATHUR, B.F.	12*
LOWE, J.F.	9*	MATROS, YU.SH.	9
LOWSON, R.T.	9 12	MATSUMOTO, G.A.	18* 23*
LU, P.L.	11*	MATTHEWS, W.E.	37*
LUBYANYI, V.V.	24	MAU, F.A.	2*
LUCAS, K.	4*	MAUGH, T.H., II	3* 33* 38* 40*
LUOTKE, P.R.	6 9 17 16	MAY, K.	12
LUOWIG, L.P.	7 17	MAZARSKII, V.L.	19 24
LUECKEL, W.J.	40*	MAZUMBAR, B.K.	34*
LUESCHER, E.	5*	MAZZUCATO, E.	36*
LUSK, L., JR.	12*	MCAULIFFE, C.A.	3* 22*
LVOVA, A.P.	4 12	MCCALLUM, J.	30*
LYNCH, J.F.	2* 12*	MCCARTY, R.D.	4 5 6
		MCCAULL, J.	40*
MACINKO, J.	13*	MCCOURT, F.R.	4*
MACTAGGART, J.W.	8*	MCCOY, R.A.	7*
MADDOCKS, F.E.	11 14	MCCRACKEN, G.M.	5 12
MADEY, T.E.	12*	MCCULLOH, T.H.	37* 39*
		MCDONALD, T.E.	30

## AUTHOR INDEX (CONT.)

MCCEL VENNY, R.T.	2	29		
MCGOWAN, J.G.	2			
MCGREW, J.L.	15*	20*	23	
MCINTYRE, P.	7			
MCKEE, H.B.	23			
MCKELLAR, A.R.W.	4*			
MCKELVEY, J.M.	5			
MCKETTA, J.J.	2*			
MCKINLEY, C.	11	14*		
MCLEAN, J.G.	2*	28*	39*	
MCLEOD, W.J.	12	20		
MCMAHON, J.F.	37*			
MC MORRIS, O.W.	4*			
MCPHERSON, W.	7*	23*		
MCPHERSON, W.B.	11*	14*		
MCTAGUE, J.P.	4	5		
MCWILLIAMS, F.G.	37*			
MEADOWS, P.	3*			
MEANTI, L.	37			
MEESE, W.G.	2*			
MEHTA, D.C.	27*	38*		
MEIER, A.K.	33			
MEIER, G.G.	2			
MEINEL, A.B.	31*			
MEINEL, M.	31			
MEISSNER, H.P.	34			
MELNIK, YU.M.	24			
MENG, P.R.	9	17		
MERCER, S.	12	20		
MERRIMAN, J.R.	12*	20*		
MERTE, H., JR.	9*	23*		
MERTENS, F.G.	5			
METROT, A.	12			
METTER, I.M.	12			
METZ, W.D.	5*	32*	33*	36* 39*
MEYER, C.	2	3	26	28
MEYER, C.F.	29*	30*		
MEYER, H.	5	24		
MEYER, L.	5*			
MICHEL, J.W.	12*	14*	25*	28* 33* 37*
MIHALY, F.	37*			
MIJNHEER, A.	13			
MIKHAILOVA, O.L.	4			
MIKHALCHENKO, R.S.	15*			
MIKHNEVICH, G.V.	14*			
MILLER, A.J.	18*	37*		
MILLER, C.D.	17*			
MILLER, O.H.	2*	27*		
MILLER, G.H.	4*	7*	10*	
MILLER, R.C.	8			
MILLER, W.S.	9			
MILLS, G.A.	37*	38*		
MILLS, J.	27*	37*	38*	
MILLS, R.G.	36*			
MILLS, R.L.	5			
MILNER, M.J.	12*			
MINACHEV, KH.M.	12*			
MINKIN, H.L.	13			
MINONES TRILLO, J.	10*			
MISHEHENKO, YU.A.	12			
MISHIMA, S.	33*			
MITCHELL, O.N.	4*			
MITCHELL, R.C.	16*	23*		
MITROFANOVA, A.N.	4*			
MIZUTANI, M.	4*			

MOCHIZUKI, T.	7	19
MOELLER, F. W.	38*	
MOERKERKEN, H. C. H. A.	4*	
MOISEEV, A. M.	17	
MONCHICK, L.	4*	
MONTENON, M.	24	
MOODY, B. E.	37	
MOORE, O. O.	2*	
MOORE, H. G.	23*	
MOORE, R. B.	38	
MOORE, W. M.	18*	37*
MORAAL, H.	4	
MOREAU, J.	40	
MOREL, J. P.	37*	
MORGAN, M. G.	33*	
MORGAN, S. K.	14*	16*
MORI, Y.	10	
MORING, W. W.	18	37
MOROZENKOV, YU. M.	8	
MOROZOV, V. S.	8*	
MORRILL, C. C.	40*	
MORRIS, D. N.	25*	27* 28*
MORRIS, T. F.	18*	
MORRISON, W. E.	2*	
MORROW, V. E., JR.	31*	
MORSE, R. N.	31*	
MORTIMER, A. R.	9*	
MOSES, R. A.	9*	14* 23*
MOUNT, T.	33	
MOYERS, J. C.	29	
MROCHEK, J. E.	12*	25* 27*
MUELLER, H.	5*	
MUELLER, R. F.	29*	35*
MUELLER, R. P.	4*	8*
MUELLER, W. D.	38*	
MUELLER-MICHAELIS, W.	39*	
MUENGER, J. R.	12*	20*
MUGIYA, C.	10*	
MULLER, F. J.	15*	23*
MULLINS, J. C.	4*	
MUNN, R. J.	4	
MUNOZ, A.	13	23
MURAKAMI, Y.	17*	
MURANO, K.	17*	
MURATOVA, B. L.	8	
MURPHY, D. W.	9*	14*
MURPHY, W. J.	11	14
MURPHY, Z. F.	38*	
MURTHY, M. V. K.	14*	
NAFIKOV, E. M.	4*	
NAGAI, K.	31	
NAGAMINE, K.	5	
NAKAHARA, N.	2*	
NAKAMURA, T.	5	
NAKSHUNOV, V. S.	12	
NASH, R. T.	2*	
NAUGOLNYKH, K. A.	9	24
NAVICKAS, J.	14	15 23
NEOSTUP, V. I.	4	
NEKRASOV, A. N.	24	
NELSON, H. G.	7*	
NELSON, W. L.	12*	27*
NEPOROSHNY, P. S.	2*	27*

# AUTHOR INDEX (CONT.)

NEUGEBAUER, A. R.	5	24		
NEWSON, R.	38*			
NEWTON, C. L.	12*	13*		
NEZU, H.	12	20	25	
NICHOLLS, C. M.	1			
NICHOLLS, J. A.	11			
NICHOLS, L. D.	33			
NICHOLS, R. C.	35			
NICHOLS, R. H.	18*	23*		
NIKITIN, O. T.	4			
NIKULINA, V. S.	12			
NIMMO, N. M.	37			
NIR, S.	4*			
NOHKA, J.	9*			
NOJIMA, S.	37			
NORMAN, G. E.	8			
NORTHROP, C. J., JR.	11*	14*		
NORTON, P. R.	12			
NOVAK, J. K.	9*	14*		
NOVICK, S.	35*			
NOWAK, K.	36*			
NUCKOLLS, J.	3*	5	24*	36
NUTTALL, J.	12	25		
OATES, W. A.	7			
OGILVIE, J. F.	7*			
OHGASHI, N.	10			
OHMORI, T.	10			
OHTA, T.	3*			
OKAMOTO, H.	12			
OKER, E.	9			
OLDS, F. C.	2*	26*	35*	
OLIEN, N. A.	18	37		
OLSEN, W. A., JR.	18*			
ONN, D. G.	9			
ONO, K.	7			
OPSCHOOR, G.	13			
ORLOVA, A. A.	4			
ORLOVA, G. N.	12			
ORLOVA, M. P.	4*			
OROURKE, F.	23			
ORTON, G. F.	23*			
ORTTUNG, W. H.	5*			
OSTAD-HOSSEINI, A.	31*			
OSTGAARD, E.	5*			
OSTOTERO, J.	4*			
OSTRONOV, M. G.	4*			
OTA, H.	4			
OTHMER, D. F.	32*			
OTT, W.	18	23		
OWINGS, M. J.	39*			
OZAKI, A.	4	12		
PAAUWE, J.	5			
PAGANI, P.	24			
PAQUETTE, A. J.	38*			
PAPAMARCOS, J.	2*	38*		
PAPELL, S. S.	9*	14*		
PARCELL, L. J.	4	7	10	
PARIISKAYA, A. V.	4*	11*		
PARKER, M. J.	38*			
PARR, J. G.	2*			
PARRAVICINI, G. P.	5*			
PASCUAL, L.	37			
PASHLEY, J. H.	12	20		
PASHKOV, V. V.	8*			
PASTERNAK, A.	38*			
PATHA, J. T.	23*	31*		
PATON, N. E.	7			
PATTEN, T. C.	23			
PATTERSON, H. W.	9	16	23	
PATZELT, A.	11*	14*		
PAUL, H. G.	23			
PAVLYUCHENKO, L. V.	8			
PEARCE, D. R.	4			
PEEBLES, M. W. H.	37*			
PELLER, I. C.	4			
PENNOCK, A. P.	15*			
PENSCH, J. R.	37*	38*		
PERAIRE, S.	24*			
PEREZ, J.	7			
PERKINS, W. G.	4*	7*		
PERLEE, H. E.	11	24		
PERRET, J. C.	37			
PERROUD, P.	4*	6*	9	11* 18*
PERRY, H.	26*	29*	33*	
PESCHKA, W.	5*	14*	30*	
PESTALOZZI, W. G.	18			
PETEL, Y.	37*			
PETERS, W.	35	38		
PETERSEN, R. H.	21*			
PETERSON, H. A.	30			
PETROVSKII, YU. V.	9	14		
PETZINGER, K. G.	10*			
PHARO, T. J.	32			
PHILLIPS, J. M.	32			
PICARD, J.	4			
PICCINI, F.	5			
PICHLER, H.	26*	37*		
PIENTKA, J.	4*			
PIERCE, A. P.	40			
PIERCE, B. L.	9*			
PILIPENKO, YU. K.	10	13	24	35
PINGS, W. B.	2*	38*		
PLATE, C. A.	37			
PLUMB, H. H.	18	19		
PLUSQUELLEC, J.	7			
POLTORAK, O. M.	4	12		
POMART, A.	11*			
POPE, D. H.	16*	23*		
POPOV, I. L.	4*			
PORLO, S. P. S.	4			
PORODNOV, B. T.	4	9		
POST, R. F.	36*			
POSTMA, H.	36*			
POTTER, R. M.	34			
POTTER, N.	2			
POULTER, K. F.	12*			
POWELL, J. R.	36*			
POWELL, R. L.	7			
POWERS, G. J.	14			
PRADHAN, A. V.	16	17*		
PRAST, G.	13*			
PRAUSNITZ, J. M.	4	8		
PREUSSER, R. H.	37*			
PRICE, R. V.	26*	37*	38*	39*
PRIMET, M.	12*			
PRIOR, W. R. C.	5*			



# AUTHOR INDEX (CONT.)

PRITCHARD, J.	12		
PROCOPI, M.	12		
PROFFIT, R. L.	11	18	
PROKHVATILOV, A. I.	5		
PRUDKOGLYAD, A. F.	24		
PRYOE, J. A.	12		
PUBENTZ, R. L.	10*	13*	
PURCELL, J. R.	16		
PURNELL, J. H.	4		
PUSHKAREV, V. V.	5		
PYLANT, H.	2		
PYRCIOCH, E. J.	37*	38*	
QAQER, A.	4*		
QUADE, R. N.	25*	35*	
QUENTMEYER, R. J.	9	23	
RACZYNSKI, W.	7*		
RAGHURAMAN, K. S.	37*		
RAICH, J.	4		
RALPH, E. L.	31*		
RAMEY, J. T.	2*	35*	
RANDELL, J. E.	22*		
RANDALL, K. R.	9		
RAO, R. V. S.	14		
RAPHAEL, C.	2*	26*	
RAPIAL, A. S.	9	12	
RAW, I.	25		
RAY, O. L.	2*	26*	
RAYNES, W. T.	4*		
RAZ, B.	5		
REDDY, S. P.	4*		
REED, L. H.	18	37	
REED, T. B.	21*	37*	
REIO, R. C.	11	37	
REIOER, F. J.	11		
REIOER, R.	11		
REIFF, O. O.	14*		
REILLY, J. J.	12*	28*	
REIN, R.	4		
REINSTROM, R. M.	25		
REMPE, W. H., JR.	7*	17*	
RENAFD, M.	7*		
RENON, H.	3		
RESCA, L.	5		
RESTA, R.	5		
REUSS, J.	4		
REUTER, F.	17	23	
REUTT, V. Sh.	4	9	
RHODES, R. T.	37*		
RIBE, F. L.	30		
RICE, J. C.	24		
RICE, R. R.	14	15 23	
RICHARD, L. L.	14*	20*	
RICHARDS, K. J.	18		
RICHAROSON, J. T.	37*		
RICHARDT, A.	12		
RIDDLE, J. L.	18	19	
RIEHL, J. W.	5*	8*	
RILEY, G. E.	37*		
RILEY, J. P.	4		
RINGLER, M. D.	1	37	
RITCHINGS, F. A.	2*		
RO, S. T.	4		
ROBBINS, R. F.	17*		
ROBERTS, H.	38		
ROBERTS, K. V.	36*		
ROBERTS, R.	2*		
ROBERTS, R. J.	5*		
ROBERTS, R. W.	2*		
ROBINSON, A. L.	30*		
ROBSON, F. L.	33*		
RODELY, A. E.	18*		
ROOER, H. M.	4*	5* 6* 18*	
ROE, B.	24*		
ROEGER, A., III	37*		
ROELS, O. A.	32		
ROGERS, J. O.	9*	30	
ROGERS, K. A.	12*		
ROHSENOW, W. M.	11	37	
ROIZEN, L. I.	9*	14*	
ROLPH, E.	34		
ROMAINE, O.	14		
ROMAN, W. G.	20*	23*	
ROMANOWSKI, W.	10*		
ROOKE, O. E.	37*		
ROSA, R. J.	33	35	
ROSAI, L.	12*	18*	
ROSE, O. J.	26*		
ROSEN, B.	11*	18*	
ROSS, M.	4*	5	
ROTH, P. K.	14	17 18	
ROTHFUS, R.	32		
ROUX, M.	2*		
ROWE, W. M.	40		
ROYAL, M. J.	37*		
ROZHKOV, I. V.	12*		
RUBIN, E. S.	38		
RUBIN, G. R.	9	14	
RUDENSKY, T.	4		
RUOHAM, R.	4	10	
RUOOLPH, P. F. H.	37*	38*	
RUHEMANN, M. S. W.	12*	20*	
RUKHAEZE, A. A.	5		
RUOFF, A. L.	5*		
RUSSELL, J. H.	12*	25*	
RUSSELL, J. L., JR.	3*	25* 35*	
RUTH, J. W.	37*	39*	
RYE, R. R.	12		
RYZHENKO, B. N.	4*	8*	
SACHSENMAIER, P.	5	36	
SAILOR, V. L.	2*	27* 35*	
SAITO, S.	8		
SALAMA, M. A.	40*		
SALMASSY, O. K.	15	23	
SALTYKOVA, V. A.	4	12	
SALZANO, F. J.	3		
SALZMAN, J. A.	9*	14* 23*	
SALZMANN, H.	5	36	
SAMUELS, E.	38		
SANCTUARY, B. C.	4*		
SANORI, R.	4*		
SANGOHL, G. S., JR.	11*	14*	
SANMARTIN, J. R.	18*	23*	
SARASHINA, E.	8		
SARKES, L. A.	37*		

AUTHOR INDEX (CONT.)

SARLAT, I. M.	14	23	SEAGRAVE, J. O.	4*
SARMASAEV, M. T.	8*		SEARL, M. F.	2*
SASS, A.			SEAY, G.	37
SAUZADE, M.	30		SEDES, C.	11
SAVAGE, H. C.	7	9	SEGEL, M.	16
SAVCHENKO, V. I.	4*	8*	SEGELER, C. G.	1* 37*
SAVERY, C. W.	2*		SEGUIER, F.	3*
SAVINO, J. M.	1*	40*	SEIFRITZ, V. W.	3* 21* 22*
SAVOY, J.	37	39	SEIKEL, G. R.	33
SAWATA, S.	31		SEKIGUCHI, T.	5 36
SAHYER, R. F.	3	21	SELEZNEV, V. D.	8
SAHYER, W. A.	11	14	SELWOOD, P. W.	10
SCALAPINO, O. J.	10		SENGERS, J. M. H. L.	4*
SCHACHT, R. L.	9*	23*	SENGERS, J. V.	4*
SCHAEFER, H.	2*	27*	SERIKOV, L. V.	8 12
SCHAEFER, H. R. A.	18	31*	SEROV, V. I.	11* 26*
SCHAFFERT, F. W.	37		SEYMOUR, R. J.	32
SCHANZ, J. J., JR.	37	39	SHAREVSKAYA, O. I.	4
SCHARLE, W. J.	11*	14*	SHAREVSKII, B. A.	17*
SCHEIWE, J. P.	18*		SHASHKOV, A. G.	4* 8*
SCHENCK, H.	25*	27*	SHAW, M.	35*
SCHLESINGER, J. R.	2*	26*	SHAW, T. L.	30 40
SCHLINGER, W. G.	12	20	SHEARER, H. A.	38*
SCHMAUCH, G. E.	10*		SHEARER, J. W.	24* 35*
SCHMIO, B. K.	37	38	SHEEHAN, T. V.	3
SCHMIO, W.	8	20	SHEINOLIN, A. E.	33 37
SCHMIOT, A. F.	9*	14* 16*	SHEININA, A. A.	8
SCHMIOT, G.	35*		SHERIOAN, E. O.	38
SCHMIOT, H. J.	12	20 25	SHERLEY, J. E.	9*
SCHMIOT, L. O.	12		SHERMAN, A. L.	9*
SCHMIOT, R.	12		SHESTAKOV, V. O.	9
SCHMIOT, R. A.	37	38	SHEVYAKOV, G. G.	4 9
SCHMITT, I.	11	37	SHIGEHARA, Y.	4* 12*
SCHMITTER, K. H.	36*		SHIKI, N.	8
SCHNEIOER, O. B.	18	23	SHINAGAWA, M.	12* 20* 25*
SCHOEPEL, R. J.	22*		SHIPMAN, L. M.	8*
SCHOLANO, E.	37		SHOOK, D. F.	18*
SCHOLZ, W. H.	12*		SHVALB, V. G.	4
SCHORA, F. C., JR.	37*	38*	SHVETS, A. O.	17
SCHREINER, F.	25		SIEBKER, M. H.	35*
SCHREINER, W. C.	38		SIEGEL, H. M.	37* 38*
SCHULLER, R. P.	37		SIELANKO, J.	8*
SCHULTEN, R.	37*		SIGEL, R.	5 36
SCHULTZ, H.	7		SILVER, M.	9
SCHULZ, G.	37*		SILVESTRI, M.	2*
SCHULZE, W.	4*	12*	SIMMONS, G. W.	7 12
SCHUMACHER, W. J.	37		SIMMONS, J. E.	24
SCHURR, S. H., ED.	2*	27* 28*	SIMONEAU, R. J.	9
SCHURR, S. H.	2*	26*	SIMPSON, A. U.	6 9
SCHUSTER, P.	27*	35*	SIMPSON, J. W.	33* 35*
SCHUSTER, R.	34*		SINOT, C. F.	4* 6* 9* 17 18
SCHWARTZ, M. H.	14		SINGH, B. K.	4
SCHWARTZ, S. H.	9	14 15 23	SINGLETON, A. H.	10
SCHWEICKERT, T. F.	23		SKAPEROAS, G. T.	38
SCHWEINFURTH, S. P.	2		SLATER, P.	37*
SCHWENOTNER, A. H.	37		SLATTERY, W. L.	5
SCIBBE, H. W.	7	9 17	SLIEPCEVICH, C. M.	3*
SCOLES, G.	4		SMALL, W. J.	3* 21* 28*
SCOTT, A.	39		SMEJTEK, P.	9*
SCOTT, H. T. JR.	11	14	SMELYANSKII, V. V.	24
SCOTT, L. E.	10*		SMERNOFF, B. J.	2* 26*
SCOTT, R. B.	1*	4	SMETANA, J.	18
SCOTT, R. W.	11*	14* 18*	SMIL, V.	26*
SEABORG, G. T.	2*		SMITH, C. S.	12* 20*
SEAOR, J. D.	9*		SMITH, E. B.	4

# AUTHOR INDEX (CONT.)

SMITH, F. J.	33	SUMMERS, C. M.	2* 27*
SMITH, G. C.	7	SUNG, C. C.	5
SMITH, J. D.	40	SUPPA, E. G.	31*
SMITH, J. M.	33	SURDI, V. L.	14*
SMITH, M.	33*	SURREY, A. J.	2* 26* 27* 33* 35*
SMITH, M. C.	34*	SUTTON, W. K.	14
SMITH, R. V.	9* 14 16	SVIDINSKII, V. A.	5
SMITH, W. J.	14	SWAIN, M. R.	20* 22*
SNYDER, M. J.	2*	SWISS, M.	37* 38*
SNYDER, R. W.	18	SYNDER, M. J.	26*
SOEDJANTO, P., JR.	37*	SYTNIK, V. V.	24
SOLYAKOV, V. K.	4* 7* 12*	SZALKAI, G.	2
SOMA, M.	12	SZEGC, G. C.	2*
SOMMER, A. W.	7	SZOTS, M.	2* 27*
SORENSEN, J. P.	8		
SOSHKO, A. I.	7		
SOWA, M.	3	TABACHNIK, E. I.	8
SPACIL, H. S.	12* 20* 25*	TABATA, J.	20*
SPAIN, I. L.	5* 7*	TAKAHASHI, M.	4* 19*
SPRAGINS, F. K.	39*	TAKEI, M.	2* 27* 29* 39*
SPRINGBORN, H.	26* 27* 37*	TAKEUCHI, K.	3
SPRINGER, G. S.	9*	TALLEY, W. W., II	2*
SPUCKLER, C. M.	16 23	TAMPLIN, A. R.	31*
SQUIKES, A. M.	33* 37* 38*	TANG, K. T.	8*
SRINIVASAN, K.	14	TANI, T.	31
STALINSKI, B.	13*	TANIMOTO, M.	5* 24* 36*
STANKOV, V. KH.	8	TANTRAM, A. D. S.	40*
STANLEY, N.	18 23	TANZ, H.	12*
STARK, J. A.	9* 14* 16 23*	TARAN, V. N.	3
STARKE, K.	12 13	TARMAN, P.	37
STARF, C.	2* 35 36	TARMAN, P. B.	37
STEEB, H.	7*	TATRO, R. E.	15 23
STEIN, H.	4*	TAYLOR, A. H.	37*
STEIN, J.	33*	TAYLOR, C. E.	36*
STEIN, J. E.	7	TAYLOR, D. W.	4*
STEIN, W. A.	4*	TAYLOR, H. S.	10*
STELZER, I. H.	2* 29*	TAYLOR, N.	4
STEPHAN, A.	11 14	TAYLOR, R. W.	33
STEPHENS, D. R.	38*	TAYLOR, T. N.	7*
STEPHENSON, M. J.	12 20	TCHERTKOV, A. A.	4
STERFETT, C. C.	33	TEFANKJIAN, D. A.	18 37
STETSENKO, YU. E.	5	TEISSONEY, J. P.	12* 20*
STEWART, W. G.	6 9* 14*	TENNYSON, R. N.	27* 37*
STEWART, W. E.	8	THELLIEZ, M.	8*
STEWART, W. F.	11* 14* 22*	THEOBALD, P. K.	2*
STIDDARD, M. H. B.	12	THIBAUT, J. J.	12 20
STILES, R. E.	11* 14*	THIBAUT BRIAN, P. L.	11 37
STINSON, H. P.	14* 17*	THIESSEN, A.	3 24
STOCKHAM, T. L.	7* 9* 21*	THOMAS, W. C.	24*
STOCKLIN, G.	35	THOMAS, W. D.	37*
STOLPE, H.	2*	THOMASSEN, K. I.	30*
STOKES, R. W.	9 14 13	THOMPSON, B. H.	37
STOLL, A. P.	14*	THOMPSON, H. E.	18* 23*
STOYANOVA, D. A.	24	THORN, F. H.	12 20
STRASSER, A.	11 14 18*	THORNTON, S. J.	4*
STRAUB, D.	9*	THRING, M. W.	2* 29*
STRAUB, J.	4*	TIEPEL, E. W.	8*
STRECANISKY, J. F.	18*	TIMMERHAUS, K. D.	4
STREETT, W. B.	8*	TIRATSOO, E. N.	1* 37*
STRELOW, R. A.	7* 9*	TITCOMB, C.	7*
STRICKLAND, R. J.	14 17	TITTERINGTON, W. A.	12* 25*
STUART, R. W.	2* 35*	TKACHEV, L. G.	9*
SUETIN, P. E.	4 8* 9	TKACHEV, V. I.	7
SULLIVAN, F. A.	13* 26*	TODD, D. K.	29 30
SULLIVAN, J. A.	9*	TODD, W. G.	8



# AUTHOR INDEX (CONT.)

TODEREAU, C.	12*	20*	VITTORI, M.	5
TOELLE, V.	12*		VGELTER, J.	12*
TOLBERG, R. S.	12		VOLKOV, V. P.	4
TOLMACHEV, A. M.	12*		VON ELBE, G.	11 14*
TOLSTOV, K. O.	5*	24*	VON WALD, J. L.	10*
TOPCHIEVA, K. V.	4		VONFREEDSUDORFF, C. G.	38*
TORIUMI, T.	8		VONNEGUT, B.	11 14
TOUFAR, W.	8		VORRES, K. S.	38
TRAPY, J.	4*		VOTH, R. O.	6 9 11* 14 18*
TREGO, A. L.	14	16	VRANCKEN, P. L. L.	37*
TREMMEL, E. B.	35*		VUL, E. B.	5
TREPP, C.	24		VYSHENSKAYA, V. F.	8*
TRIEBSKORN, B. E.	37			
TROITSKII, N. S.	11	18	WADE, N.	40*
TSAL, M. I.	12		WAGNER, A. F.	8*
TSAPLINE, B.	8*		WAHL, A. C.	8
TSAROS, C. L.	37	38	WAIBEL, R.	8
TSVINEV, A. P.	18	24	WAKAMATSU, S.	23 31
TUNG, P. P.	7*		WAKEFIELD, S. A.	2* 26*
TURNER, G. E.	18*		WAKEHAM, W. A.	4
TYBOUT, R. A.	31		WALKER, O. G.	37* 38*
TYRRELL, T.	33		WALKER, G. O.	37
			WALL, J. D.	37*
UCHIOA, T.	36*		WALLACE, B. A., JR.	5* 24*
UDALL, S. L.	2*		WALLACE, W. E.	7
UDOVIOCHENKO, B. G.	5		WALTERS, W. J.	11* 37*
UHL, A. E.	27*	37*	WANG, F. C.	4
ULMER, R. C.	2*	26*	WANNER, R.	5*
ULYBIN, S. A.	4		WANOUS, O. J.	9* 23*
UNLANO, H. O.	4*		WARD, D. E.	40*
URASEK, O. C.	9*	17*	WARD, O. J.	37*
USMANOV, A. G.	4		WARREN, F. M.	2*
			WARSHAWSKY, I.	18
VAOAS, Z.	2		WATANABE, K.	12*
VAGIN, E. V.	4*	12*	WATANABE, M.	12*
VAILEV, L. M.	24*		WATERMAN, W. W.	37*
VAKHLOV, A. S.	8		WATERS, M. H.	21
VALBUSA, V.	4		WATKINS, G. E.	33*
VALEVICH, A. I.	24		WATTS, C. R.	15 23
VAN CAUWELAERT, F. H.	10*	12*	WEAVER, K. F.	2* 33*
VAN DEN HOUT, K. D.	4		WEBB, F. J.	24*
VAN HECK, K. H.	35*	38*	WEBER, L. A.	4
VAN KRANENDONK, J.	4*	8*	WEBER, G.	37*
VAN MAL, H. H.	13*		WEOLER, G.	4* 7* 12*
VAN METER, R. A.	11	14	WEI, J.	2*
VAN THIEL, M.	5		WEI, P. S. P.	8
VAN VORST, W. O.	22		WEI, R. P.	7* 12*
VANCE, R. W.	1*	14*	WEIKEL, T. O.	11* 22*
VANOER ARENO, P. C.	11	14	WEIL, G. L.	15* 30*
VANGUNOY, O. A.	10	13	WEIL, L. EDITOR	1*
VANIMAN, J. L.	6*	23*	WEIL, S. A.	37
VANWANOERHAM, M. G.	7		WEINBERG, A. M.	2* 28* 75*
VASILENKO, I. I.	7	11	WEINBERG, M.	4*
VASILEV, L. M.	24*		WEINHOLO, J. F.	2*
VASSERMAN, A. A.	4*		WEINTRAUB, A. A.	11* 24*
VEYRAT, J.-F.	4	6 11 13	WEISHEIT, J. C.	10 12
VILCHEZ, J. C.	10		WEISS, A. J.	37*
VILCU, R.	4*		WEITH, J. O.	12* 20*
VILLAR, J. C.	13*	17*	WEITZEL, O. H.	19*
VILLERMAUX, J.	4*	8*	WELSH, H. L.	4 5 8
VINSONNEAU, B.	4*		WEMPLE, R. P.	11 14
VISHNEV, I. P.	9*	14*	WENGER, N. C.	13
VITENIUS, R.	4*		WENTORF, R. H., JR.	12* 20 25
			WENZEL, W.	25 27

# AUTHOR INDEX (CONT.)

WERNER, R. W.	7*	YAMASHINA, T.	12
WERT, C. A.	7	YANAGI, H.	12*
WEST, J. A.	1 26	YANG, C.	4
WETT, T.	37* 38*	YANG, Y. Y.	33 35
WHITE, D. C.	2* 26* 29* 33*	YAROUMIAN, L. H.	39
WHITE, R. C.	16 23	YASUI, R. K.	40
WHITE, R. J.	12* 20* 37*	YATES, G. B.	15* 23*
WHITMAN, M.	35	YAVORSKY, P. M.	39* 40
WICHMANN, H.	23*	YEN, L. C.	8
WILKE, H.	4*	YODA, S.	33*
WILKS, K.	38	YDRIZANE, M.	8*
WILLIAMS, I.	38*	YOSHIKAZU, K.	37*
WILLIAMS, J. E.	38*	YOSHIMURA, S.	8
WILLIAMS, J. J.	37	YOUNG, G. C.	11
WILLIAMS, J. M.	5* 36*	YOUNG, J. W.	40*
WILLIAMS, J. P.	31* 32* 33* 35*	YOUNG, W. C.	30
WILLIAMS, L. D.	3* 22* 27* 28*	YOUNGLOVE, B. A.	4*
WILLIAMSON, J. W.	2		
WILLIAMSON, K. D., JR.	14 24*	ZABETAKIS, M. G.	1* 11* 12* 14* 24*
WILLCOUGHBY, A. B.	11* 23*	ZACHARY, A. T.	3
WILSON, J. S.	34*	ZAKHAROV, S. M.	4 7 12
WILSON, L. C.	11 14	ZANDEE, A. P. L. M.	4
WILSON, R.	37*	ZARESKEI, G. K.	37*
WILSON, W. A.	16	ZARICHNYAK, YU. P.	8
WILSON, W. G.	13 23	ZAYARNII, N. S.	8*
WILTON, C.	11 23	ZEININGER, H.	8*
WINDLE, A. H.	7*	ZELODVICH, A. G.	8 10 13 24 35
WINGER, J. C.	2*	ZELVENSKII, Y. D.	12
WINGER, J. G.	2*	ZENER, C.	32*
WINGET, G. D.	12 31	ZENNER, G. H.	14*
WINSCHKE, W. E.	3*	ZEROKA, D.	4* 5*
WINSTEAD, T. W.	5 9 17 23	ZHALGASOV, A.	8*
WINTER, C.	27* 37*	ZHUKOV, V. A.	24
WINTERBERG, F.	36*	ZHUN, G. G.	10* 12
WIPF, S. L.	30*	ZIEGLER, W. T.	4
WISANDER, D. W.	7 17*	ZIMA, YU. V.	7 11
WISWALL, R. H., JR.	12 20	ZIMINA, N. KH.	4* 12*
WCBIG, A.	36*	ZIMMERMAN, G.	3 24
WOLFF, S.	9 24	ZIMOGLYAD, B. N.	12
WOLK, R. H.	33	ZINN, S., JR.	24*
WON, K. W.	3*	ZOTOVA, T. V.	12
WONG, G. S.	9 17* 23*	ZRAKET, C. A.	2* 28*
WOOD, C. C.	23*	ZUOKEVITCH, D.	40*
WOOD, L.	3 5 24 26	ZWEIFEL, F.	12* 20* 25*
WOOD, M.	37*		
WOODCOCK, G. P.	23 31		
WOODS, R. A.	7*		
WOODS, W. P.	7*		
WOODWARD, A. A.	1 11 14		
WOODWARD, W.	2 31		
WODLEY, H. W.	4*		
WORLDUND, A. L.	6 23		
WORTBERG, E.	25 27		
WORTMAN, H. R.	37*		
WOZNIAKOWSKI, B.	10		
WU, CHING CHANG	32		
WUELLENWEBER, H.	12 20 25		
WURST, C. A.	9 14 23		
WYNVEEN, R. A.	12		
YAFFEE, M. L.	2*		
YAKOVLEV, V. F.	4*		
YAMAMOTO, S.	9		
YAMAMOTO, T.	26* 29*		

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16. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.) This NBS Technical Note is a compilation of references dealing directly and indirectly with the possible future use of hydrogen as a fuel. The references were selected using an automated information system operated by the Cryogenic Data Center. This bibliography of references emphasizes the use of cryogenic technology in the hydrogen field. Articles are indexed under 40 subject headings and an author index is included. Over 1600 references are included in this bibliography.			
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